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The New Economic Mechanism in Bulgarian Agriculture

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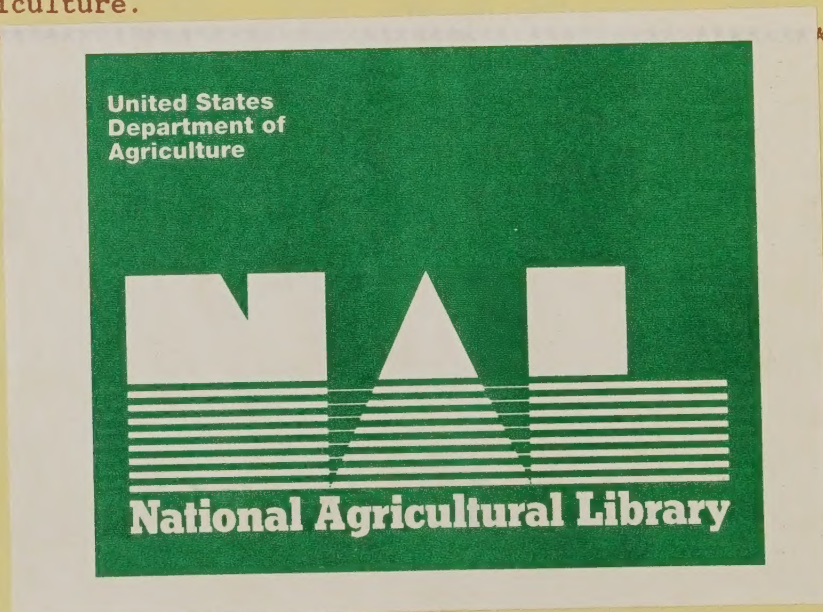
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ABSTRACT

A set of economic reforms called the New Economic Mechanism (NEM) was introduced in Bulgaria in 1979 in an attempt to reverse a decade of slowing production growth and escalating costs. The NEM was intended to spur productivity increases by decentralizing management, giving individual production units more control over production and input decisions, and tying enterprise income and workers' wages more closely to production results. However, in the 4 years since its implementation the NEM has not yet been fully implemented. Decisionmaking is still highly centralized, and unprofitable firms continue to be subsidized. While production growth has been respectable, it has been achieved at great cost to the Bulgarian economy as input costs have continued to rise. Agricultural exports have not risen as fast as was hoped, and imports have increased. Imports from the United States have declined, on the other hand, and are not expected to rise much during the rest of the eighties.

Keywords: Bulgaria, New Economic Mechanism, reform, agricultural management, prices, costs, agricultural trade, cost-accounting, self-sufficiency.

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CONVERSION FACTOR
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SUMMARY

The set of economic reforms known as the New Economic Mechanism (NEM), introduced in Bulgarian agriculture in 1979, attempted to reverse a decade of slowing growth in the livestock sector and stagnation in the crop sector. The NEM's purpose was to spur productivity increases by reducing centralized control over production and granting more autonomy to individual enterprises, giving them a greater stake in their own performance. However, in the 4 years since the implementation of the NEM, many of its provisions have not been fully implemented. There remains a considerable amount of central control and unprofitable enterprises continue to be tolerated. Production has not increased significantly and much of the inefficiency in production that led to the implementation of the NEM continues.

The key provisions of the NEM included the following:

- o Central Government planning indicators were limited to four: compulsory sales to the state; export earnings and limits on imports; contributions to the state budget; and limits on the use of certain inputs.
- o All enterprises and their sub-divisions, scientific organizations, and all other organizations were placed on an internal "cost accounting basis." They were required to make a profit and could not look to the state for financial assistance. Wages were to be linked to performance.
- o Decentralization of decisionmaking. The Ministry of Agriculture and the Food Industry was abolished and replaced by the National Agro-Industrial Union, whose central governing council was to be made up of representatives from the enterprises under it.
- o Regional self-sufficiency. Each district was to produce enough fruits, vegetables, and livestock products to meet the needs of its own population.
- o Greater incentives to private farmers. The private sector contribution was recognized as essential to the realization of the self-sufficiency program, and several measures were introduced to improve conditions for private farming.

Progress in implementing the NEM has been limited. Many units of production still do not operate on a cost-accounting basis and losses are still tolerated in enterprises. Despite the reduction in planning indicators (from 35 to 4), 80 percent of agricultural production is still mandated by central planning organs. The self-sufficiency program is still more a wish than reality.

Average annual gross agricultural output in 1980-82 was 6 percent higher than in the previous 5-year period; in 1984, it was another 6 percent over the 1980-82 average. This growth, however, was achieved at a great cost, as net production continued its decline. Moreover, the crop sector declined by 4 percent during 1980-82, while the livestock sector

increased by 20 percent. Significant yield increases were achieved only in grains; these were offset by a declining area. Yields of most other crops declined.

The most striking change since the introduction of the NEM is the growing importance of the private sector. Private farmers were responsible for all the growth in meat and vegetable production and most of the production growth in fruit, milk, and eggs. In those districts where the program for regional self-sufficiency has been successful, the private sector was responsible. The socialized organizations have not performed well at all, and the Bulgarian Government has come to rely more on the contribution of private farmers.

The NEM initially appeared to have had a positive impact on U.S. trade with Bulgaria. The emphasis on the livestock sector temporarily benefited U.S. exports to Bulgaria, as Bulgarian imports of corn and soybean meal increased markedly during 1980-82. However, U.S. exports to the country declined sharply in 1983 and 1984 and will likely continue low through the decade. Bulgaria has turned to Brazil for most of its soybean meal because of favorable prices and more potential for countertrade. Its corn imports have dropped to almost zero and are likely to remain minimal because of improved domestic production and reduced use of grain for feed.

The New Economic Mechanism in Bulgarian Agriculture

Nancy Cochrane

INTRODUCTION

Throughout the seventies, Bulgaria was a surplus agricultural producer and a major exporter of agricultural products within the Council for Mutual Economic Assistance (CMEA). Because of its favorable geographical position, Bulgarian agriculture has consistently performed in a far superior manner than that of the Soviet Union and other East European countries. One might conclude that Bulgarian agriculture was least in need of reform. Yet, the seventies were a period of slowing growth in agricultural production and escalating production costs. Socialized agriculture in Bulgaria was plagued by inadequate investment, an aging capital stock, a lack of transport, and a poorly coordinated marketing system, all of which hindered efficiency gains.

Precisely because the agricultural sector is an important source of export earnings, the Bulgarians towards the end of the seventies began to place a high priority on improving the efficiency of the sector. The result was the introduction of the New Economic Mechanism (NEM) in 1979. The NEM's purpose was to provide the means for increasing production, and thereby exports, with a minimal increase in inputs. These goals were to be accomplished by decentralizing decisionmaking and making individual enterprises more accountable for their performance.

This study examines the NEM's provisions and evaluates their effect on agricultural performance. Questions addressed are: (1) to what extent the NEM's provisions have actually been implemented and (2) to the extent that they have, have they had the desired results? Specifically, has output increased; has productivity--labor, capital, and other inputs--increased; and have exports improved?

To address these questions, this report examines data on production, trade, yields, investment and inputs, and gross and net income during 1971-82. This period was divided into four 3-year intervals: 1971-73, 1974-76, 1977-79, and 1980-82. The 3-year averages were used to compare performance up to 1979 with that in 1980-82 following the NEM's implementation. Where available, data for 1983 and 1984 were also evaluated. Evidence used in this study also includes commentaries appearing in the Bulgarian press and the author's interviews with Bulgarian Government officials.

Comparisons of output versus inputs before and after the NEM are necessarily crude. Rigorous statistical analysis was impossible, in part because of the short span of time since the NEM was implemented, but mainly because of the lack of data. The Bulgarian yearbook supplies figures for total tractors, fertilizers, and other inputs used in agriculture. There are data on total arable land under irrigation. But there is no information on the distribution of these inputs to individual crops or on the supply of inputs to the private sector. Even worse, fixed assets in agriculture are valued at "full initial cost;" that is, they are neither depreciated nor deflated.

Table 1: Selected economic indicators of agricultural sector

Indicator	1971-73	1974-76	1977-79	1980-82	1983	1984
<u>Index: 1971-73 = 100</u>						
Gross industrial output	100	126	153	175	201	209
Gross agricultural output	100	108	113	120	118	128
Crops	100	100	101	96	86	100
Livestock	100	119	133	159	168	173
Total national income	100	125	151	178	185	191
Agriculture's contribution to national income	100	102	96	85	90	79
Retail food price index	100	101	104	123	126	N/A
Agricultural production costs (1970 prices) <u>1/</u>	100	102	143	225	257	268
<u>Percent</u>						
Agricultural share in national income	22	18	14	<u>2/</u> 19	19	16
Crop share in agricultural output	61	57	55	49	50	45
Livestock share in agricultural output	39	43	45	51	50	55

1/ Based on calculations of Thad Alton et al. (see footnote 3/, p. 33).

2/ The share of agriculture in national income beginning in 1980 was calculated using 1982 prices, while the shares in preceding years and the index of agriculture's contribution to national income were calculated in 1971 prices. The huge jump in share during 1980-82 next to a declining contribution reflects the rapid price increases that took place in the agricultural sector relative to other sectors beginning in 1980.

Source: Statisticheski godishnik, various years.

BACKGROUND TO THE REFORMS

The seventies were marked by stagnating growth in agriculture relative to industrial growth. The Bulgarians attributed the poor performance of agriculture to inadequate investment, inefficient use of what inputs were available, and low labor productivity.

Agricultural Performance During the Seventies

While the industrial sector and the overall economy experienced respectable growth during the seventies, the agricultural sector lagged behind. Emphasis continued on industry at the expense of agriculture. Between 1971-73 and 1977-79, gross agricultural output increased by 13 percent, while industrial output increased by 53 percent (table 1). Agriculture's share in investment, 15 percent during 1971-73 and only 13 percent during 1977-79, continued to be inadequate.

Production

The crop sector fared particularly badly during 1971-79, growing only 0.2 percent per year. Part of the problem was that sowing of certain crops, particularly corn, was less than planned. However, the main cause was the slow growth of yields (tables 2 and 3). Only wheat yields grew at a respectable rate, with a 9-percent increase from the 1971-73 average to the 1977-79 average. Barley yields increased by 1 percent during the same period, while corn and sunflowerseed yields decreased by 1 percent. Yields of other crops fell even more precipitously: 10 percent for potatoes and 12 percent for sugarbeets.

Table 2: Grain yields

Period	Total	Wheat Tons/ha	Corn	Barley
1971-73	3.46	3.35	4.09	3.02
1974-76	3.49	3.47	3.93	3.25
Growth <u>1</u> /	.9	3.6	-3.9	7.6
1977-79	3.57	3.64	4.05	3.06
Growth <u>1</u> /	2.3	4.9	3.1	-5.8
1980-82	4.16	4.31	4.57	3.63
Growth <u>1</u> /	16.5	18.4	12.8	18.6
1982	4.69	4.63	5.50	4.08
1983	3.72	3.20	5.20	3.24
1984	4.30	4.20	5.55	4.08

1/ Percentage change from previous 3-year average.

Source: Statisticheski godishnik, various issues.

Table 3: Yields of other crops

Period	Soybean	Sunflower	Potato	Sugarbeet	Apple	Grape	Tomato
	Tons/ha						
1971-73	1.12	1.77	12.79	32.62	8.05	5.36	29.95
1974-76	1.82	1.59	11.27	26.75	8.64	5.47	25.8
Growth <u>1/</u>	63	-10	-12	-18	7	2	-14
1977-79	1.39	1.76	10.78	26.85	8.28	5.35	25.29
Growth <u>1/</u>	-24	11	-4	0	-4	-2	-2
1980-82	1.27	1.77	10.57	24.18	12.45	6.59	29.36
Growth <u>1/</u>	-9	1	-2	-10	50	23	16
1982	1.68	2.02	11.64	26.17	12.61	7.57	29.41
1983	1.28	1.76	10.41	22.61	14.16	6.04	20.74
1984	1.07	1.79	10.55	21.15	13.94	6.79	28.83

1/ Percentage change from previous 3-year average.

Source: Statisticheskii godishnik, various issues.

Table 4: Livestock products

Period	Meat	Beef	Pork	Lamb	Poultry	Milk	Eggs
	1,000 tons						
1971-73	551	112	223	101	111	1,314	1,729
1974-76	650	118	304	97	128	1,435	1,817
Growth <u>1/</u>	18	5	36	-4	15	9	5
1977-79	737	144	335	96	156	1,658	2,178
Growth <u>1/</u>	13	22	10	-1	22	16	20
1980-82	794	155	377	109	148	1,910	2,451
Growth <u>1/</u>	8	8	13	14	-5	15	13
1982	807	162	378	111	153	2,000	2,489
1983	837	165	394	114	161	2,091	2,639

1/ Percentage change from previous 3-year average.

Source: Statisticheskii godishnik, various issues.

Table 5: Livestock inventories

Period	Cattle	Hogs 1,000 head	Sheep	Poultry
1971-73	1,366	2,591	9,908	34,199
1974-76	1,555	3,247	9,857	36,695
Growth 1/	14	25	-1	7
1977-79	1,740	3,543	9,991	4,0294
Growth 1/	11	9	2	10
1980-82	1,796	3,827	10,565	41,067
Growth 1/	3	8	6	2
1983-85	1,771	3,771	10,747	42,736
Growth 1/	-1	-1	2	4

1/ Percentage change from previous 3-year average.

Source: Statisticheski godishnik, various issues.

The livestock sector performed somewhat better, with growth averaging 4.9 percent per year during 1971-79 (table 4). However, chronic fodder shortages resulting from disappointing corn harvests along with reduced meal imports caused growth in livestock inventories to decline towards the end of the decade (table 5).

Consumption

Per capita consumption of fruits, vegetables, and animal products throughout the decade was well below the average for the European Community (EC) and even below most of Eastern Europe (table 6 and fig. 1). Consumption of fruits and vegetables in 1975 was lower than it was in 1970, and shortages of these commodities were being reported. Meat consumption increased at a good rate during the first half of the decade, growing 19 percent between the 1971-73 and the 1974-76 averages, but then increased only 7 percent during the next 3-year period. Even with this growth, per capita meat consumption in Bulgaria was among the lowest in Eastern Europe; only Romania and Yugoslavia had lower consumption.

Problems in the Agricultural Sector

Most of the agricultural sector problems during the seventies could be attributed both to shortages in critical factors of production and the inefficient use of what factors were available. Labor shortages, a problem throughout the Bulgarian economy, were worst in agriculture. Investment in agriculture was inadequate. Tractor and combine inventories increased little and remained well below the rest of Europe; tractors and other machinery in many cases were too old and should have been replaced. Finally, poor organization in the agricultural sector and poor coordination with other sectors led to considerable losses between fields and markets.

Table 6: Per capita food consumption

Period	Grain	Meat	Eggs	Vegetable	Fruit
	<u>Kg/capita</u>				
1971	179	43	127	86	140
1972	173	49	126	82	120
1973	170	50	135	84	121
1971-73	174	48	129	84	127
1974	165	52	140	90	113
1975	162	58	146	90	119
1976	164	62	149	90	117
1974-76	164	57	145	90	116
Growth <u>1/</u>	-6	19	12	7	-9
1977	157	59	171	93	109
1978	159	61	197	94	113
1979	159	62	187	100	116
1977-79	158	61	185	96	112
Growth <u>1/</u>	-4	7	28	7	-3
1980	160	61	204	94	106
1981	159	62	209	102	116
1982	159	68	220	105	119
1980-82	159	64	211	100	114
Growth <u>1/</u>	1	5	14	6	2
1983		69	231	105	108
1984		71	237	104	116

1/ Percentage change from previous 3-year average.

Source: Statisticheski godishnik, various issues.

Labor

As in most developing countries, there was a steady decline in the agricultural labor force during the sixties and seventies. The labor force declined by 32 percent between 1960 and 1970, or at an average rate of 2.8 percent per year. It declined by 28 percent between 1970 and 1979 (table 7). This outflow of agricultural workers was more serious than just the numbers would suggest because it was the younger, more productive workers who left the farms, seeking higher wages and better cultural amenities in the cities. Productivity among those workers left on the farms remained low. Even with the additional labor drafted during harvest season from among students and industrial workers, there was often not enough manpower to complete the harvest.

Slowing Investment Growth

The stock of fixed assets in agriculture continued to grow at an increasing rate during the seventies: 26 percent during 1974-76 and 30 percent during

FIGURE 1: AVERAGE MEAT CONSUMPTION
IN BULGARIA AND OTHER EUROPEAN COUNTRIES

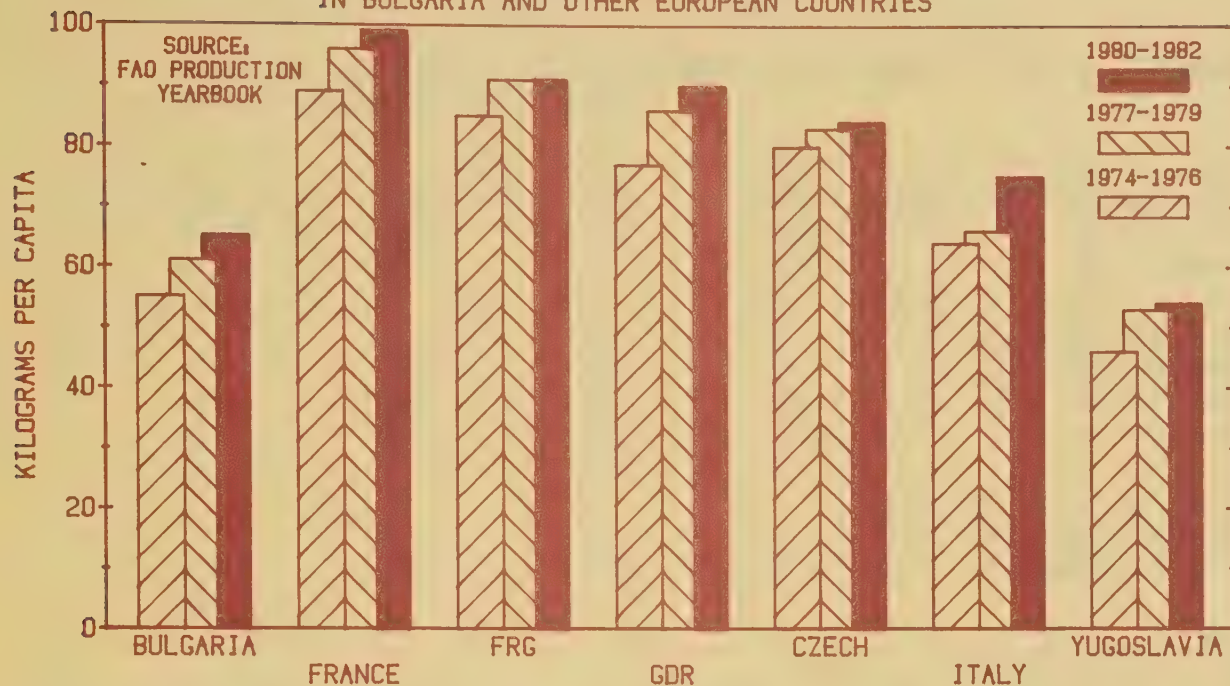


Table 7: Agricultural labor, wages, and labor productivity

Measure	1971-73	1974-76	1977-79	1980-82	1982	1983
Total labor force (1,000 workers)	3,044	3,663	3,904	4,066	4,100	4,114
Agricultural labor force (1,000 workers)	1,361	1,196	1,064	1,018	993	1,025
Agricultural share in labor force (percent)	45	33	27	25	24	25
Agricultural wages (index)	100	114	127	145	152	149
Agricultural wages as percentage of average wage	91	95	97	92	93	90
Labor productivity in agriculture (index)	100	123	145	161	198	190

Sources: OECD, Prospects for Agricultural Production and Trade in Eastern Europe, Vol. 2, OECD, 1982, p. 158; Statisticheski godishnik, various issues.

1977-79 (table 8). Capital investment growth, however, declined considerably, such that average investment during 1977-79 was only 5 percent higher than the 1974-76 average. The difference between investment growth and the growth in fixed assets suggests that much less machinery and equipment was retired during 1977-79 than in previous periods. This conclusion is supported by numerous press reports stating that much of the existing capital stock was outdated and had zero book value.

Table 8: Agricultural investment and fixed assets

Measure	1974-76	1977-79	1980-82	1982	1983
	Index: 1971-73 average = 100				
Total investment	130	156	179	205	207
Agricultural investment	127	136	140	131	132
Buildings	110	117	168	148	144
Machinery	167	175	168	175	181
Fixed assets in					
agriculture	136	158	170	178	188
Buildings	126	171	203	214	231
Machinery	119	144	170	178	179
Change in gross agricultural output per unit of investment <u>1/</u>	93	60	63	N/A	N/A

N/A = Not available.

1/ Calculated by dividing average change in gross agricultural output for each 3-year period by average investment for the same period. Investment was used as the best available proxy for the change in capital.

Source: Statisticheski godishnik, various issues.

Low Return to Capital

The return to capital was particularly disappointing during the seventies. Since fixed assets are valued at "full initial cost," output per leva of fixed assets is not a good measure of the productivity of capital. The best measure available is the change in output per leva of investment: this measure tends to overstate capital productivity, but it is more accurate than the first. By this measure, capital productivity declined by 7 percent during 1974-76 and 35 percent during 1977-79. Reasons for the poor productivity of capital were most likely the age of much of the capital stock and the rather high volume of investment tied up in unfinished construction.

By all available measures, the Bulgarians appear to have invested heavily in the agricultural sector, but with limited results (table 9). Tractors per 1,000 hectares, measured in 15 horsepower units, increased from 24 during 1971-73 to 35 in 1977-79; grain combines, while not increasing in numbers, gained in capacity. Land under irrigation increased from 1,047,000 hectares to 1,167,000 in the same period, comprising 25 percent of the arable land during 1977-79. Fertilizer deliveries per hectare rose 32 percent between the same periods, from 136 to 179 kilograms per hectare. Yet, with these increases in inputs, grain yields rose only 3 percent, while yields of other crops continued to decline. Much of the machinery was outdated and in need of repair, and spare parts were continually in short supply. There were frequent complaints of late fertilizer deliveries. Irrigation systems were outdated, and were frequently not adequately supplied with water. One

Table 9: Inputs in Bulgarian agriculture

Input	1971-73	1974-76	1977-79	1980-82	1983	1984
Tractors:						
1,000 units	60	64	64	61	58	57
1,000 15 hp units	111	138	151	153	151	148
Combines (1,000 units)	19	22	23	20	18	17
Fertilizer applied <u>1/</u>	134	134	162	208	217	207
Nitrogen	70	74	82	108	118	N/A
P205	53	51	71	76	74	N/A
K20	11	9	10	25	24	N/A
Plant protection agents <u>1/</u>	3.4	4.6	6.8	9.2	7.3	7.7
Irrigated land (1,000 ha)	1,047	1,125	1,167	1,179	N/A	N/A
Percent of arable land	22	34	25	25	N/A	N/A

N/A = Not available.

1/ Kilograms of active ingredients per hectare of arable land.

Source: Statisticheski godishnik, various issues.

report claimed that only 15 percent of the land under irrigation was adequately supplied with water. 1/

Price Disparities

As of 1977, prices paid to agricultural producers had not changed since 1967. 2/ However, production costs escalated during that period. Average production costs during 1971-73 were 7 percent higher than in 1970, and during 1977-79 they were 43 percent higher than during 1971-73. 3/ Profitability was thus low, giving farm managers few incentives to raise production.

Poor Organization

The agricultural sector suffered considerable waste due to a general lack of coordination among various operations. Harvesting was often disorganized: labor was not assigned where it was needed, machinery was not repaired on time, and transportation was often not available. Storage facilities were inadequate. Harvesting, purchasing, and processing were uncoordinated.

International Trade and Finance

Bulgaria's trade balance and international financial situation have been quite favorable compared with other countries of Eastern Europe. Due to rapid industrialization, trade turnover in Bulgaria increased more than 250 percent during the seventies and ran a slight trade surplus through most of the seventies (table 10). Bulgaria's hard currency debt has been relatively

small, reaching a high of about \$3 billion in 1980 and falling to \$1.5 billion since then. 4/ This favorable situation has been achieved by severely restricting imports when threatened with a rising deficit and by aggressively promoting exports, sometimes at the expense of domestic consumption.

Foreign trade during the seventies was managed by the Ministry of Foreign Trade through a system of state foreign trade organizations (FTO's). Production enterprises were thus isolated from the international marketplace and had no incentive to produce for export other than plan directives coming from the central Government. The result was much inefficiency, with no competition among enterprises and poor quality of goods. Furthermore, export prices were below domestic prices, requiring state subsidies.

Roughly 75 percent of Bulgaria's trade was with the nations of CMEA, 50 percent with the Soviet Union alone. This trade was characterized by a surplus at the beginning of the decade, followed by a steadily increasing deficit. The growing deficit may have been a result of the increasing share of fuels in Bulgaria's imports, nearly all of which came from the Soviet Union, and the worsening terms of trade between Bulgaria and the Soviet Union.

Table 10: Trade turnover by groups of countries

Item	1971-73	1974-76	1977-79	1980-82	1983	1984
<u>Billion leva (current prices)</u>						
Total trade:						
Imports	2.81	4.96	6.74	9.74	11.97	12.79
Exports	2.86	4.49	6.78	9.88	11.82	12.97
Balance	.05	-.47	.04	.14	-.15	.18
Socialized countries:						
Imports	2.21	3.64	5.45	7.51	9.55	10.23
--from CMEA	2.15	3.55	5.35	7.36	9.39	N/A
Exports	2.29	3.55	5.26	6.95	9.03	9.80
--to CMEA	2.21	3.44	5.11	6.79	8.90	N/A
Balance	.08	-.09	-.19	-.56	-.52	-.43
Developed countries:						
Imports	.45	1.06	1.04	1.75	1.67	1.76
Exports	.38	.47	.78	1.32	1.23	1.18
Balance	-.06	-.60	-.26	-.43	-.46	-.58
Developing countries:						
Imports	.15	.26	.26	.49	.75	.81
Exports	.19	.48	.74	1.60	1.55	1.99
Balance	.04	.22	.48	1.11	.80	1.18

N/A = Not available.

Source: Statisticheski godishnik, various issues.

Trade with nonsocialized countries began with a deficit, which turned to a surplus during 1977-79. The surplus was a result of the marked increase in exports going to developing countries, particularly Libya, Iran, and Iraq. Trade with the developed West was continually in deficit. While Bulgaria needed the technology which could only be offered by the West, its machinery exports could not compete on the western markets and its agricultural exports faced stiff EC import barriers. The sharp decline in the deficit with developed nations during 1977-79 was mostly a result of the Bulgarian Government efforts to reduce imports.

Bulgaria is an important supplier of agricultural and food products to the other CMEA nations (tables 11 and 12). Its main agricultural exports are tobacco, fruits, vegetables, meat and meat products, and wheat. More than half of all these exports go to the Soviet Union, and a large part of the remainder goes to other CMEA countries.

Bulgaria's primary agricultural imports are cotton, sugar, corn, and oilseed meal. Most of the cotton comes from the Soviet Union, while the sugar is supplied by Cuba. For corn and oilseed meal, however, Bulgaria must turn to the West. Because of attempts to restrain hard currency imports, this has been a major constraint on the livestock sector.

The United States was a supplier of corn and soybean meal to Bulgaria throughout the seventies. However, the U.S. share in Bulgarian imports of these commodities varied considerably from year to year. In 1976, Bulgaria imported 246,000 tons of corn from the United States, which was almost two-thirds of its total corn imports; but, in 1977 these imports amounted to only 3,000 tons. The U.S. share in Bulgarian meal imports was quite low throughout the decade.

Table 11: Commodity composition of trade

Commodity	1971-73	1974-76	1977-79	1980-82	1983	1984
	<u>Billion leva</u>					
Imports	2.81	4.96	6.74	9.74	11.97	12.79
Machinery	1.24	2.04	2.62	3.33	4.10	N/A
Fuels	.79	1.62	2.65	4.35	5.54	N/A
Other	.78	1.30	1.47	2.06	2.30	N/A
Exports	2.86	4.49	6.78	9.88	11.82	12.97
Machinery	1.00	1.84	3.10	4.52	5.73	6.19
Processed food	.81	1.11	1.37	1.71	1.93	2.26
Raw agricul- tural products	.22	.24	.33	.45	.45	.40
Other	.83	1.30	1.98	3.20	3.71	4.12

N/A = Not available.

Source: Statisticheski godishnik, various issues.

Table 12: Bulgarian agricultural trade:
total and with United States

Item	1971-73	1974-76	1977-79	1980-82	1983	1984
	<u>Million U.S. dollars</u>					
Agricultural exports	429	665	1,118	1,322	1,241	N/A
Agricultural imports	181	489	513	632	712	N/A
Agricultural imports from United States	2	23	28	129	35	17
	<u>1,000 metric tons</u>					
Principal exports:						
Tobacco	65	70	62	68	63	62
Fresh and preserved vegetables	497	471	500	445	389	344
Fresh and preserved fruit	65	298	307	343	346	337
Meat and meat products	69	93	102	108	112	110
Wheat	351	168	289	615	520	314
Principal imports:						
Total grain	111	581	583	701	181	44
Corn	34	319	268	665	181	44
Wheat	50	71	186	50	0	0
Total meal	83	196	177	191	272	395
From United States:						
Corn	0	142	89	590	102	44
Soybean meal	0	17	53	160	35	0
	<u>Percent</u>					
U.S. share:						
Corn	0	45	33	89	56	100
Soybean meal	0	9	30	84	13	0

N/A = Not available.

Sources: Statisticheski godishnik; FAO Trade Yearbook; CMEA Handbook.

EARLY ATTEMPTS AT AGRICULTURAL REFORM

Realizing that the agricultural sector was lagging, the Government began introducing organizational reforms in the early seventies. The intent was to promote efficiency through the horizontal or vertical integration of the then existing state and collective farms into huge conglomerates, with a highly centralized management overseeing every aspect of production, processing, and distribution. When the hopes for improvements failed to materialize, the Bulgarians came to rely more and more on the private sector to make up the shortfall. The seventies thus also saw several measures introduced to raise incentives for individual farmers.

Farm Amalgamation

In 1970, the Government issued a decree which initiated the horizontal and vertical integration of the state and collective farms. The new organizations were called Agro-Industrial Complexes (AIC's) and Industrial-Agricultural Complexes (IAC's). From the beginning, the horizontally integrated AIC's were the prevalent form of organization. Only eight vertically integrated IAC's were set up in 1973, all of which were in the sugar industry. As sugarbeet yields continued to lag, this form of organization was gradually abandoned. After 1979, the IAC's ceased to be listed in the Statistical Yearbook and apparently were abolished.

By 1972, there were 170 AIC's, consisting of 156 state and 679 collective farms (table 13). At that time, the AIC's had 83 percent of the cultivated land and produced 95.4 percent of the gross output. The average AIC consisted of five or six state and collective farms, cultivated 23,000 hectares, and employed 6,635 workers. Initially, the state and collective farms that merged into the AIC's were to retain their autonomy. However, by 1975, the autonomy of the state and collective farms had been abolished in more than half the AIC's, and in 1977 the state and collective farms had retained their identities in only 24 of the 147 AIC's. The rest were subdivided into 767 territorial branch farms, 460 specialized enterprises, and 69 brigades. 5/

In 1976, the AIC's and IAC's were combined into a giant supercomplex known as the National Agro-Industrial Complex (NAIC), which also included a number of enterprises involved in processing and marketing and was directly under the control of the Ministry of Agriculture and the Food Industry. Planning was entirely from the center, with as many as 35 obligatory indicators handed down from the Ministry and the state Planning Committee and through the local district people's councils. The plan for each AIC or IAC covered all aspects of production, including the physical volume of crops and livestock to be sold to the state; the volume of investment and its uses; consumption norms for all materials, parts, and products; allowable expenditures per 100 leva of production; labor remunerations per 100 leva of total income; technological measures to be introduced; and others.

Regional Self-Sufficiency

An important part of the reforms introduced into agriculture was the decree issued on October 19, 1977, on the "self-sufficiency of the population in the systems of inhabited places with fruit, vegetables, milk, eggs and fish." 6/ Each district was responsible for supplying enough of these commodities to meet its population's needs. In the event of shortfalls, the district would be required to procure those commodities by trading their surpluses with other districts. The days of relying on the state for everything were over.

Incentives to Private Producers

Because the self-sufficiency program was to be achieved with no additional investment by the socialized sector, its success came to rely heavily on increasing the contribution of the private sector, which then consisted primarily of private plots allotted by collective farms to their members.

Thus, every decree issued on regional self-sufficiency also included several measures intended to improve conditions of the private plotholders and to increase cooperation between the plotholders and socialized enterprises.

The importance of the private sector in agriculture was first officially recognized in a decree issued in 1973, the purpose of which was to increase the output of private plots and thereby improve supplies of fruit, vegetable, and livestock products. Private farmers were allowed to hold livestock, limited only by the family's ability to handle it. The Central Cooperative Union (CCU) was to be responsible for all purchasing from the private sector, purchasing baby pigs from socialized farms and selling them to private plotholders, and providing fertilizer, fodder, and other necessary inputs to the farmers. The AIC's were instructed to allocate pastures and provide veterinary services to private farmers.

The 1977 decree on self-sufficiency further emphasized the role of the private sector. Particular stress was placed on the restoration of abandoned and fallow land. The AIC's were required to restore this land with minimum use of social labor, using instead the labor of housewives, pensioners, and workers working in their spare time. Some of this unused land was to be distributed to the AIC's members as private plots; the rest was to be provided to nonagricultural enterprises in the form of auxiliary farms. These farms were to be a main source of food for the cafeterias of nonagricultural enterprises.

The AIC's were required to provide services and seeds to private farmers, to rent their machinery to the plotholders, to insure an adequate supply of small machinery and tools, and to allow farmers to use the irrigation systems "against payment." The Ministry of Agriculture and the Food Industry and the CCU now had joint responsibility for the timely purchase of fruits and vegetables from the farmers. Marketing was to be streamlined so that fruits and vegetables would be supplied directly to the local markets.

In an effort to boost livestock production, the AIC's were exhorted to provide grazing land to plotholders. Contracts were to be signed between private farmers and AIC's whereby the AIC would provide young animals to the farmers, and, in return, the farmers would sell the fattened animal back to the AIC. The AIC's were to provide mixed feed to private farmers in exchange for feed grain delivered by farmers. The CCU was to provide facilities for the processing of milk and meat from private farms.

PROVISIONS OF THE NEW ECONOMIC MECHANISM

By the late seventies, Bulgarian authorities realized that management of agriculture was overcentralized. The Ministry of Agriculture and the Food Industry was issuing as many as 35 obligatory indicators to farms, dictating production, acreage, wages, investment, deliveries to purchasing organizations, and almost all other aspects of the farms' operations. Farmers were often required to deliver crops for which they had no experience raising or for which their land was unsuited. 7/ Production continued to fall short of goals and productivity lagged.

Moreover, it became apparent that the private sector was not responding to the 1973 and 1977 decrees as expected. Initially, the 1973 decree had a marked effect on private sector production. Between 1974 and 1976, private cattle holdings increased 24 percent, and hogs belonging to private farmers more than doubled (table 17). However, beginning in 1977, growth in cattle numbers slowed considerably, and hog numbers declined sharply. There was also a slowdown in growth of private sector meat production. The initial enthusiasm on the part of private farmers seemed to come to an abrupt end, and the 1977 decree did little to reverse this.

There turned out to be a major flaw in the decrees of 1973 and 1977: the AIC's, while required to provide aid to the private farmers and purchase their output, were not allowed to include purchases from the private farmers in their own plan fulfillment. As a result, the AIC's had no real incentive to do anything for plotholders. AIC's for the most part placed lowest priority on the needs of private farmers. ^{8/} As a result, fodder deliveries were irregular; purchasing from private farmers was poorly organized. Fertilizers and small-scale machinery were still lacking; the stores that were supposed to be established by the CCU for the sale of these items to private farmers had not been set up. There were complaints that not enough baby pigs and breeding animals had been distributed and that AIC's had often failed to deliver fodder in return for livestock deliveries. ^{9/}

In response to the continuing problems in the agricultural sector, the New Economic Mechanism (NEM) was introduced in 1979 to provide a framework for increasing production without large increases in labor or material inputs. This task meant raising productivity by giving enterprises and their workers more of a stake in their performance. The basic principles of the NEM were:

- o Simplification in central planning. The number of planning indicators issued by the central Government was reduced to four.
- o Economic self-sufficiency. Each enterprise was to operate on its own "internal cost-accounting;" that is, it would be forced to realize enough income to meet its production costs and make a profit without relying on state subsidies. Wages of all workers would be linked directly to performance.
- o Decentralization. The Ministry of Agriculture and the Food Industry was abolished and replaced by the National Agro-Industrial Union (NAIU). The Central Council of NAIU was to be made up of representatives from the organizations subordinated to it. At the same time, the average size of the AIC's was drastically reduced and their number increased.

Other aspects of the NEM included incentives to keep the younger, more skilled workers on the farms, in the form of higher remuneration and improved social amenities; sharp increases in procurement prices in order to make agriculture more profitable; and several measures to improve conditions for and raise the productivity of the private farms.

National Agro-Industrial Union (NAIU)

In introducing the NAIU, Communist Party Chairman Todor Zhivkov accused the old Ministry of excessive centralization and inertness, impeding the development of agriculture, and paralyzing the initiative of workers and their immediate managers. The new organization was to have control over agriculture, food processing, agricultural research and services, and to some extent agricultural machine building. Its purpose was to promote vertical integration among these activities. NAIU was to be governed by a 13-member executive council and a Central Council made up of 175 representatives from AIC's and other organizations, as well as selected "leading workers." These representatives were to be elected and were to be accountable to rank and file members; they could be removed if they failed to perform their duties.

The District Agro-Industrial Unions (DAIU)

An extension of the NAIU to the district level, the DAIU's are made up of representatives from AIC's and other member organizations of NAIU. Their role is to coordinate activities of the various production, processing and servicing organizations within the district. They distribute state targets among the AIC's and other organizations; they assist members with their counterplans (see next section); and then coordinate and summarize the input of the member organizations to formulate an district counterplan.

AIC's

The number of AIC's was increased from 170 in 1978 to 268 in 1979, and their average size was reduced from 21,000 to 13,200 hectares (tables 13 and 14). Their boundaries were adjusted to be consistent with district boundaries. With the NEM, the AIC's were placed on an internal cost accounting basis; that is, they had to operate on their own income and were not to expect assistance from the state. With that responsibility came greater autonomy and freedom to make more of their own decisions regarding production, investment, and the distribution of income.

Autonomy of the brigade, the basic unit of production under the AIC, has also expanded. The AIC assigns to each brigade an output goal and a production schedule. The schedule includes such indicators as normative costs per unit output, gross and net income, transfers to the AIC, and allocations to brigade funds. The brigade, however, may contract with other brigades, is free to adjust the number of employees without altering the wage fund, and is allowed to keep 40 percent of its above-plan profits. On the other hand, the brigade is supposed to absorb any losses incurred by it.

Specialized Livestock Farms

About 40 percent of the hog production and over 50 percent of poultry production is concentrated in specialized livestock farms, separate from the AIC's and also under the jurisdiction of NAIU. There are 5-6 large facilities and about 10 smaller ones in Bulgaria.

Table 13: Socialized agricultural organizations in Bulgaria

	Organiza- tions in	<u>AIC's 2/ including state and collective farms</u>			IAC's <u>3/</u>
<u>Year</u>	<u>NAIU 1/</u>	<u>Total</u>	<u>State farms</u>	<u>Collective Farms</u>	
		<u>Units</u>			
1971	N.A.	170	158	662	0
1972	N.A.	170	156	679	0
1973	N.A.	160	144	535	7
1974	N.A.	153	130	462	9
1975	N.A.	152	91	28	10
1976	224	146	57	89	8
1977	224	143	50	78	7
1978	277	170	34	47	7
1979	390	268	24	34	7
1980	400	283	--	19	7
1981	396	281	--	19	--
1982	401	296	--	--	--
1983	390	289	--	--	--

N.A. = Not applicable.

-- = Not reported; presumably negligible or zero.

1/ National Agro-Industrial Union.

2/ Agro-Industrial Complex.

3/ Industrial Agricultural Complex.

Source: Statisticheski godishnik, various issues.

Table 14: Distribution of AIC's, according to size

Year	1,000 ha				
	Up to 12	12-20	20-28	28-36	Over 36
<u>Units</u>					
1976	24	33	39	31	19
1977	25	29	39	31	19
1978	50	38	40	27	15
1979	144	74	31	14	5
1980	149	77	30	16	11
1981	150	72	37	17	5
1982	172	74	35	11	4
1983	164	74	35	11	5

Source: Statisticheski godishnik, various issues.

State Economic Trusts (DSO) of the Food Industry

Also subordinate to NAIU are the large, self-financing conglomerates, known as DSO's, of the food processing industry. These include the DSO Grain Food and Feed Industry, DSO Rodopa (responsible for livestock slaughtering and meat processing), Bulgarplod (responsible for processing fruit), DSO's for wine and dairy production, and others.

Other Organizations

Also under the jurisdiction of NAIU are the Scientific Production Associations (NPO) and the Scientific Production Complexes (NPK). The NPO's are involved mainly in livestock breeding, including one for hogs and one for poultry; however, there is also an NPO for the development of seeds. The NPK's are involved in plant production.

Planning and Decisionmaking

A main achievement of the NEM was the reduction in the number of central planning indicators and increase in autonomy of the production enterprises. The number of indicators was reduced to 4 from as many as 35:

- o Compulsory sales of commodities to the state. These compulsory deliveries cover no more than eight commodities, and these are determined in accordance with the specialization and characteristics of each AIC.
- o Export earnings of the AIC and limits on AIC imports. As an incentive to increase production for export, AIC's and other production units are allowed to keep a certain percentage of above-plan export earnings.
- o Contributions to the state budget. These are determined according to the size and quality of the land belonging to the AIC and in such a way as to require the AIC to use its resources in the most efficient way.
- o Limits on the use of certain inputs. These limits also constitute a guaranteed minimum supply, which the supplying organizations are required to deliver.

Each member organization of NAIU, from the brigade to the AIC to the DAIU, is expected to provide its own counterplan, which in effect commits it to deliveries in excess of those required in the state plan. These counterplans are coordinated by the DAIU into a unified district counterplan.

Production enterprises make their own decisions regarding everything not specified in the state plan. They determine what area to plant to different crops and what livestock inventories to maintain. They can also make decisions on investment and employment. They are expected to contract with purchasing organizations for the sale of any production over and above the amounts required by the plan. They can also contract with veterinary and other services and with machine tractor stations. The enterprises can also deal directly with credit institutions.

Cost Accounting, Wages, and Incentives

Fundamental to the NEM is the principle of internal cost accounting, according to which every production unit from the DAIU to the brigade is expected to be self-supporting, to cover its production costs, and make a profit without help from above. This is intended to force enterprises to streamline their operations and raise productivity; bail-outs from the state are in theory no longer possible.

Workers' productivity was to be raised by linking wages more closely to performance. The AIC wage fund is now the residual after all other financial obligations have been met. Bonuses not exceeding 5 percent of the wage fund can be awarded for prompt and quality fulfillment of important assignments. In-kind bonuses are also allowed for above-plan output. On the other hand, workers receive just 90 percent of their wages in advance before the end of the year. The balance paid at the end of the year depends on results achieved by the brigade. The sum paid can be either more or less than the 10 percent withheld.

Procurement Prices and Subsidies

In order for individual enterprises to realize profits sufficient to be self-supporting, the Government in January and December 1980 introduced steep increases in procurement prices. These increases were deemed necessary due to escalating input costs. These prices covered all commodities purchased by socialized organizations, whether sold by the AIC's or by individual farmers (prices of produce sold directly in the farmers' markets are free).

Further Incentives to Private Producers

To remedy some of the flaws in the 1973 and 1977 decrees concerning individual producers, a new decree was issued in December 1981. Purchasing was still the primary responsibility of the Consumer Cooperative Union; however, the AIC's and DAIU's were now allowed to contract with the cooperative unions for the purchase of private farm production, both crop and livestock. This production could now be included in the AIC mandatory sales to the state. The same decree contained several measures intended to boost private livestock production. Procurement prices were increased, financed by a rise in state retail subsidies. In return for selling fattened livestock to state purchasing organizations, farmers could receive in-kind bonuses of mixed feed. However, the AIC's were also to allocate additional land for private farmers to grow their own fodder. Alternatively, farmers could use their own fodder and receive a higher price for their livestock. The decree also "recommended" that AIC's increase the number of animals that could be held by private farmers.

In 1982, the primary responsibility for marketing private production was given to NAIU, so that nearly all private production sold to the socialized sector is now purchased by AIC's.

Private farmers, however, are not required to sell their production to state purchasing organizations. They can and do sell in private markets, sometimes for twice the price paid by the state. ^{10/} The emphasis has been on providing more and more incentives to induce farmers to sell to

the AIC's instead. These include the increases in purchase prices and in-kind bonuses of concentrated feed. In addition, income from sales to state organizations is not taxed, while that from selling privately is. And the Government is continuing in its attempts to provide more services to private farmers.

Changes in Foreign Trade Organization

One of the goals of the NEM was to increase competitiveness of Bulgarian goods in foreign markets. Several measures were introduced to build closer ties between production and international markets. Enterprises were given targets for foreign exchange earnings, and they were allowed to retain a certain percentage of above-plan earnings. FTO's were placed on a cost accounting basis and were liable for any losses they incurred. Links between production enterprises and FTO's are now closer: corresponding to Rodopa, for example is the FTO Rodopaimpeks; corresponding to Bulgarplod is Bulgarplodeksport. The FTO's are still under the Ministry of Foreign Trade, but cooperation is said to be very close. Production enterprises are also allowed to set up their own FTO's, but this is done to a much lesser extent.

BULGARIAN AGRICULTURE SINCE 1979

Data on Bulgarian agricultural performance since the introduction of the NEM are fragmented and somewhat contradictory, but seem to indicate rather mixed success. Gross agricultural output has increased significantly; but, since costs have been high, real net income is down. Furthermore, the gains were realized only in certain areas; grain and livestock production increased, while other crops stagnated. Resources were apparently diverted to these sectors, at the expense of the others. The increase in production appears to have gone to increased consumption, as there has been little increase in exports. Most of the increase in production has come from the private sector. The performance of the socialized enterprises has not improved much.

Reforms in Theory and Practice

Just how far the Government is willing to go towards decentralization and greater autonomy for individual enterprises is evident from a recent commentary on the economic reforms now taking place in the People's Republic of China (PRC). ^{11/} Particularly dangerous to the Bulgarians is the "use of market mechanisms for the regulation of supply and demand" (i.e., free market prices):

The implementation [of the reform]...will undoubtedly draw the country away from a planned economy and will drastically expose it to the blows of the chaotic market economy.

Already, says the commentary, the "introduction ... of free supply and fluctuating prices has increased difficulties in the deliveries of many raw materials and equipment to the enterprises." The Bulgarians are not about to give up all centralized control over production and distribution.

Individual enterprises have theoretically been given more autonomy. But, the central and district governments still retain considerable control over production decisions and resource allocation. Discussions with

Bulgarian officials revealed that the NEM has been only partially implemented in the agricultural sector. As much as 80 percent of the socialized sector's production is still mandated by state plans. ^{12/} The AIC's also seem to have little control over the expenditure of their resources. While AIC's can make their own decisions on small investment projects, any project over 0.5 million leva must be coordinated with NAIU, and the very large projects are still proposed from the top. Prices remain fixed by the Government (the NEM was never intended to change that), so that the role of market forces remains limited.

At the same time, complaints have appeared in the press of the failure of many enterprises to fully introduce cost accounting. Only one third of the brigades in agriculture are operating in the "new way;" that is, on a self-financing basis. ^{13/} The rest are supposed to be self-financing by 1986. Reports also cite wages that are too high, a general lack of labor discipline, continued inefficiency in the use of material inputs, and a lack of coordination among production, purchasing, transport, and retailing organizations. ^{14/} Unprofitable enterprises are apparently still tolerated. Officials say that conditions vary and that since prices are uniform, AIC's working under difficult conditions will suffer losses through no fault of their own. ^{15/} To alleviate such inequities, Government policy is to tax enterprises operating under favorable conditions and provide premiums to the others. Enterprises are still being shielded to some extent from the consequences of poor management. At the same time, all available information suggests that they are being given neither the responsibility nor the authority to introduce more efficient practices.

Production

There was a general tone of disappointment over the state of Bulgarian agriculture in the commentary on the 1985 plan:

The awaited change in quality improvement as regards production and public services to the population has not yet occurred... The planned amounts of corn, sugarbeets, sunflowerseeds, soya beans, potatoes and other such crops have not been obtained. The amount of uncommissioned building projects is large... ^{16/}

The same report also complains of "shortcomings in implementing labor organizations based on brigades as well as in the cost accounting based on brigade work."

Production data since 1979 suggest mixed results. Gross agricultural production valued in constant leva was 6 percent higher during 1980-82 than in the previous 3-year period. The value of crop production, however, decreased 4 percent, while that of livestock production increased almost 20 percent.

Significant gains were achieved in grain production, with the volume of production rising 12 percent and yields 17 percent during 1980-82. Much of the increase in grain production, however, was in wheat. Corn production increased only 1 percent, because of a 10-percent decline in area. Nevertheless, corn yields have been particularly impressive; despite severe drought in 1983 and 1984, yields have continued to be over 5 tons per hectare.

The decline in corn area was accompanied by an increase in area planted to corn silage (table 15). Like other East European countries, Bulgarian policy has been to shift to nongrain sources of feed; the decline in corn for grain area reflects that policy.

Other crops did not fare well at all. Sunflowerseed yields increased only 1 percent in this period, after an 11-percent increase in 1977-79. Soybean and sugarbeet yields were down 9 percent and 10 percent, respectively. Fruit and vegetable yields saw significant improvement, with increases of 16 percent for tomatoes, 23 percent for grapes, and 50 percent for apples. However, these increases were from extremely low levels in the seventies.

Planners have apparently given priority to production of grains, fruits, and vegetables at the expense of other crops. Fruits and vegetables are an important source of hard currency export earnings, and grain is important for the livestock sector. Numerous reports indicate that corn areas have the first claim on irrigation facilities, whereas hothouse vegetable production is a large consumer of energy. The bulk of increased fertilizer deliveries (see below) have probably gone to these crops as well.

Average gross output in the livestock sector during 1980-82 increased 20 percent over 1977-79 but at a slightly slower rate than during the seventies. Meat increased 8 percent, with pork up 13 percent and poultry meat down 5 percent. Milk and egg production increased 15 and 13 percent, respectively, down slightly from the increase in 1977-79. Livestock production in the socialized sector has been increasingly concentrated in specialized livestock farms, separate from the AIC's and directly under the control of the DAIU's. Despite the concentration of 40 percent of the pork and over half the poultry production in such farms, livestock production in the socialized sector increased little; most of the increase was in the private sector (see below). 17/

Table 15: Corn area planted for grain versus silage

Corn type	1971-73	1974-76	1977-79	1980-82	1982	1983
	<u>1,000 ha</u>					
Total area:	915	870	922	953	1,012	875
Corn for grain	658	635	656	589	621	596
Corn for silage	257	235	266	364	391	279
	<u>1,000 tons</u>					
Production:						
Corn for grain	2,693	2,493	2,657	2,692	3,418	3,101
Corn for silage	4,165	4,206	5,025	5,173	2,969	6,629

Source: Statisticheski godishnik, various issues.

Input Use

By the Bulgarians' own admission, efficiency still lags in the socialized sector. Socialized organizations have been chastized for failing to implement fully the NEM provisions: inefficient use was being made of material inputs, wages were not closely enough linked with performance, and so forth. 18/

Investment

Average agricultural investment during 1980-82 was only 3 percent higher than in 1977-79 (table 8); investment in 1982 and 1983 was below the 1977-79 level. Agriculture's share in total investment declined further to an average of 12 percent during 1980-82; by 1983 its share was down to 10 percent (table 16). Investment increased in construction, but declined in machinery. In contrast, the stock of fixed assets, valued at full initial cost, increased 8 percent in 1980-82, with increases in both buildings and machinery. The stock of fixed assets evidently includes much equipment that has fully depreciated, and the tendency to rely on outdated machinery has apparently continued.

The decline in the return to capital was halted in 1980-82. The increase in real output achieved per leva of investment rose slightly from the 1977-79 level. However, the return to investment continued to be well below what it was during the first half of the seventies, and the Bulgarians themselves complain that resources are still not being used effectively.

Machinery

The situation seems worst with machinery. Consistent with the declining investment in machinery, there was little increase in tractors (expressed in 15 horsepower units) in 1980-82 and a decline in combine numbers; 1983 and 1984 saw declines in both tractors and combines. The total capacity of combines may have increased; however, there have been reports of harvest delays resulting from combine shortages. Other reports cite situations where machinery could not be repaired in time for the harvest due to the lack of spare parts. Finally, there are frequent complaints of a lack of trained operators and a resulting underuse of the machinery. 19/

Other Capital Inputs

Problems persist in the use of other inputs. There has been little increase in irrigation and many AIC's have failed to establish "day and night" irrigation. Grain drying facilities are said to be used in only two shifts instead of the optimal three, and many are not operable because of the perennial shortage of spare parts. 20/ Many dairy enterprises lack facilities for storing milk; they either have no cooling tanks, or these tanks are out of order. 21/

Fertilizer

The supply of fertilizers to farms, in contrast to other inputs, showed impressive gains during 1980-82, with total deliveries per hectare increasing 28 percent from the previous 3-year period. During this

Table 16: Structure of investment

Item	1971-73	1974-76	1977-79	1980-82	1982	1983
	<u>Percent</u>					
Agricultural share in total investment	15	15	13	12	10	10
Share of construction in agricultural investment	33	28	28	35	37	36
Share of machinery	22	29	29	25	30	31

Source: Statisticheski godishnik, various issues.

period, fertilizer use equaled that in Austria and the gap between Bulgaria and other West European countries narrowed considerably (fig. 2). Fertilizer use in 1983 and 1984 changed little. Average grain yields appear to have responded better to increased fertilizer use during 1980-82 than in previous periods. But grain yields remained behind Austria and France, and complaints continue that yields are not what they should be given the inputs used (fig. 3). Yields of other crops did not improve at all. The bulk of increased fertilizer deliveries likely went into grain production at the expense of other crops. If that is the case, the Bulgarians may have good reason to be disappointed in the results.

Labor

The decline in the agricultural labor force appears to have slowed considerably during 1980-82. It was only 4 percent during 1980-82, compared with 11 percent during 1977-79. The slowing migration off the farms came despite a deterioration in agricultural wages relative to industrial wages. While agricultural wages increased 14 percent during 1980-82, the ratio between agricultural wages and average wages for all sectors declined from 97 percent in 1977-79 to 92 percent in 1980-82. The slowing migration most likely resulted from slowing industrial growth and efforts to improve efficiency in industry and consequent difficulties in finding employment in urban areas. Measures introduced in the NEM to retain labor--inclusion of agricultural workers in pension plans, and an increase in cultural amenities--may have been successful. The increased income potential of private farming, not included in the official wage statistics, may also be helping to keep people on the farms.

There are still serious labor shortages despite the slowing migration off the farms. It is still necessary to recruit students and industrial workers to help with the harvest. Cultivation of labor intensive crops is done increasingly by AIC members and other workers working in their spare time on piecework contracts. Even with such contracts and the additional labor brought in for the harvests, there have been reports of tomatoes rotting in the fields.

FIGURE 2: AVERAGE FERTILIZER USE
IN BULGARIA AND OTHER EUROPEAN COUNTRIES

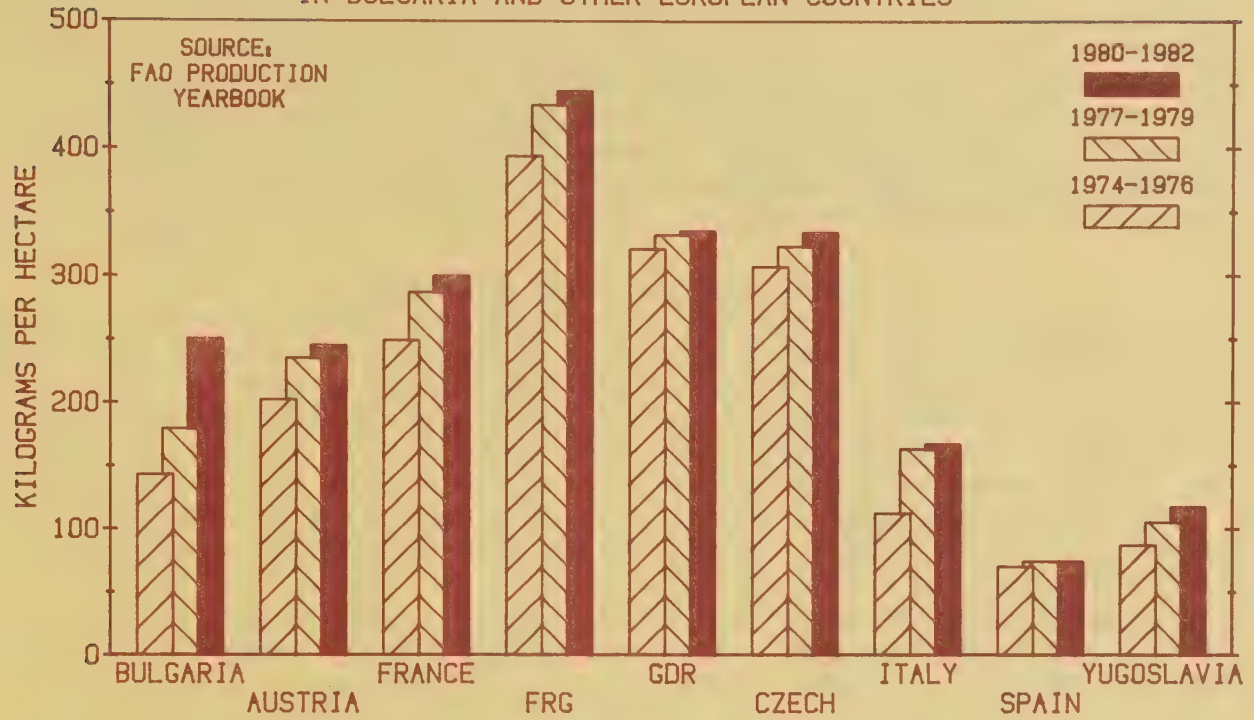
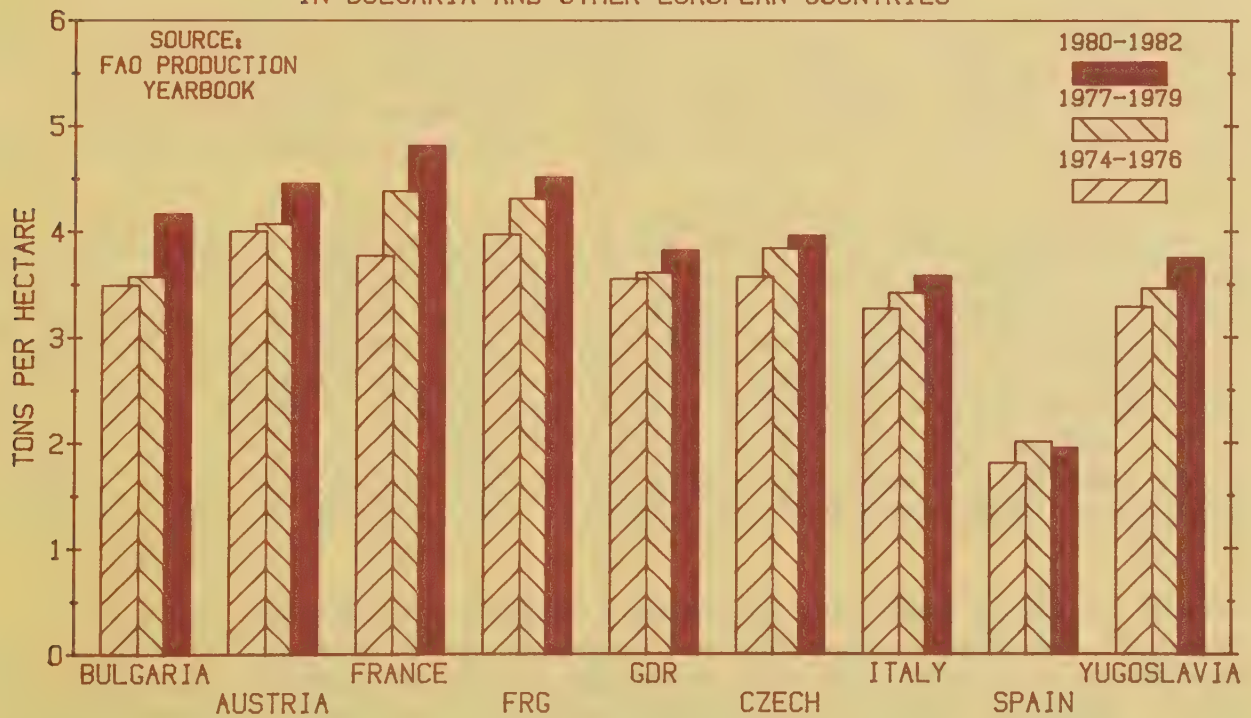


FIGURE 3: AVERAGE GRAIN YIELDS
IN BULGARIA AND OTHER EUROPEAN COUNTRIES



Bulgarians seem to regard productivity and labor discipline as continuing problems. The press has criticized AIC's for paying wages that are too high relative to productivity increases. 22/ Wages during 1980-82 increased 14 percent over the previous 3-year period, while labor productivity increased only 11 percent. Nevertheless, 1983 labor productivity was 18 percent higher than the 1980-82 average, while wages were up only 3 percent. From 1971 to 1983, labor productivity increased 78 percent, while wages have increased only 58 percent. In this broader prospective, wages lag behind productivity increases.

Production Costs and Net Income

In 1980, officials pointed with pride to a 14-percent rise in net income in 1979, after just 1 year of NEM. 23/ In succeeding years, however, net income plummeted. While average 1980-82 gross value of agricultural output in constant prices was 6 percent higher than the 1977-79 average, the net value of production suffered an 11-percent decline. The acceleration of production costs continued. After only a 10-percent rise in costs between 1970 and 1975, costs rose 40 percent during 1977-79 and 53 percent during 1980-82 and continued rising in 1983 and 1984. 24/ One of the express purposes of the NEM was to control the escalation of production costs that occurred during the seventies. To date, the NEM has not been able to accomplish this.

Prices and Subsidies

Bulgarians do not publish producer price series. Similarly, no data were published on the January 1980 increase in agricultural producer prices. But the December 1980 price increases, effective in January 1981, included 39.4 percent for wheat, 14.7 percent for sugarbeets, 10 to 25 percent for vegetables, 15 percent for beef, and 14.5 percent for cow's milk. 25/

Through 1981, the Bulgarian yearbook reported the gross value of agricultural output in constant 1971 prices; beginning in 1982, gross output value has been reported in constant 1982 prices. Since gross output for 1980 was reported in both prices, it was possible to construct a spliced 1980-82 index showing a 49-percent increase in base producer prices between 1970 and 1982.

At the time of the first producer price increase in 1980, retail food prices were raised as well, so that increased subsidies would not be necessary. Retail food prices jumped 25 percent in 1980 alone, leading to an increase of 40 percent between 1970 and 1982, while overall retail prices rose only 24 percent. 26/ However, when procurement prices were raised the second time, the Government apparently felt it could not raise retail prices again. The decree specifically stated that there would be no rise in retail prices and that the additional costs would be covered by the state budget. Retail food price rises were less than 1 percent in 1981 and 1982 and only 3 percent in 1983.

Before the NEM, retail food prices were heavily subsidized. The original intent of the NEM was to increase efficiency to the extent that the Government could eliminate all subsidies, including those on the retail level. However, due to rising production costs, agricultural producer prices had to be raised substantially to ensure profits, and the Government has preferred to increase food subsidies rather than raise retail prices.

Consumption

Despite what Bulgarians consider to be disappointing agricultural performance, per capita consumption of meat, eggs, and vegetables showed impressive gains in 1980-82 (table 6). Most of the 8-percent increase in meat production went to increased domestic consumption rather than to exports (table 13). Vegetable consumption increased 17 percent in 1980-82 after a 7-percent increase in 1977-79. Fruit consumption increased only 2 percent, but the steady decline in fruit consumption during the seventies has been reversed.

Bulgarians proudly cite these figures as evidence of the NEM's success. Nevertheless, there are indications that the level of consumption is uneven; some areas are well supplied, while there have been spot shortages elsewhere, particularly of canned fruit and vegetable, but also of flour, pig fat, margarine, dry milk, and honey. 27/ Apparently, only some districts have been successful in supplying their population's needs. Plovdiv, for example, fulfilled its 1983 plan for vegetables, while neighboring Pazardzhik fell short by 33 percent. 28/

Nevertheless, in those districts with production shortfalls, consumption does not seem to be reduced accordingly: there is very little correlation between per capita consumption and per capita production. Despite the great attention given to the regional self-sufficiency program in the press, the program is still more of a "wish" than a reality. Officials say that natural conditions vary considerably from one region to another, and no district can reasonably be expected to produce everything.

Contribution of the Private Sector

The increase in per capita consumption of livestock products and, most notably, fruits and vegetables, is the most frequently cited evidence of the NEM's success. Much of this rise in the availability of basic foodstuffs, however, has to be attributed to the private sector. The share of private sector in the production of meat, fruits, and vegetables has increased markedly, and the present short supply of inputs in the private sector indicates additional potential for growth (tables 17 and 18).

Incentives provided to private farmers for increasing deliveries of livestock products and vegetables to state purchasing organizations--higher prices, bonuses for above plan production, supply of inputs--have apparently been successful. Reports appear in the press every year claiming significant increases in sales of these products by private farmers. The private sector in 1982 produced 25 percent of all farm output, representing 34 percent of the livestock production and 16 percent of crops. 29/ It produced 42 percent of the meat, 56 percent of the eggs, 27 percent of the milk, and 34 percent of the vegetables. The private share in production sold to socialized purchasing organizations is also quite high: 27 percent for meat and eggs and 12 percent for milk.

During 1980-82, the entire increase in meat production and well over half the increase in egg production came from the private sector. While overall vegetable production declined 6 percent in 1980-82 from 1977-79, private sector production increased 23 percent; socialized sector production declined 15 percent. Such trends continued through 1983 and 1984. In 1984, the private sector produced 45 percent of the meat and 37 percent of the

Table 17: Livestock and livestock production
in private and socialized sectors

Years	Cattle		Hogs		Meat		Milk	
	Social	Private	Social	Private	Social	Private	Social	Private
	-----1000 head-----		-----1000 head-----		-----1000 tons-----		-----1000 tons-----	
1971-73	1,069	286	1,825	642	351	182	1,262	365
1974-76	1,227	314	2,148	877	386	253	1,343	398
Growth <u>1/</u>	15	10	18	37	10	39	6	9
1977-79	1,377	354	2,498	907	446	276	1,503	480
Growth <u>1/</u>	12	13	16	3	16	9	12	21
1980-82	1,418	369	2,783	769	446	314	1,642	596
Growth <u>1/</u>	3	4	11	-15	0	14	9	24
1983	1,397	372	2,663	749	462	335	1,792	656
1984	1,396	365	2,662	702	466	383	1,837	647
<u>Percent</u>								
Shares in holdings and production:								
1971-73	79	21	74	26	66	34	78	22
1974-76	80	20	71	29	60	40	77	23
1977-79	80	20	73	27	62	38	76	24
1980-82	79	21	78	22	59	41	73	27

1/ Percentage change from previous 3-year average.

Source: Statisticheski godishnik, various issues.

vegetables, up from 41 and 30 percent, respectively, in 1980-82. The increasing contribution of the private sector underscores its importance in maintaining an adequate level of consumption among the population.

Bulgarian officials, when questioned about the more productive private sector, insist that it is only with the help of the socialized sector that individual producers have been so successful. Nevertheless, there is still much room for improvement in the relations between the private farmers and the socialized sector. Purchasing from private farmers is reportedly disorganized in many places; there are insufficient purchasing points. 30/ There are supposed to be stores in every village where private farmers can purchase the small tools, fertilizer, and seed they need; but farmers complain that there are too few such stores and most of those exhibit only empty shelves. 31/ Veterinarian and other services are said to be inadequate.

While the private sector flourishes despite the marketing and supply problems, the socialized agricultural organizations, favored in the distribution of inputs, are hampered by labor shortages, soaring input costs, inefficiency, and excessive losses. The Government has made it clear that it does not want

Table 18: Crop production in private and socialized sectors

Years	Corn		Potatoes		Vegetables	
	Social	Private	Social	Private	Social	Private
	1,000 tons					
1971-73	2,022	651	213	156	1,359	220
1974-76	1,765	715	180	155	1,317	281
Growth <u>1/</u>	-13	10	-15	-1	-3	28
1977-79	1,851	795	195	199	1,372	410
Growth <u>1/</u>	5	11	8	28	4	46
1980-82	1,836	838	183	202	1,172	504
Growth <u>1/</u>	-1	5	-6	2	-15	23
1983	2,106	987	209	202	885	544
1984	2,053	956	184	218	1,111	643
	Percent					
Production shares:						
1971-73	76	24	58	42	86	14
1974-76	71	29	54	46	82	18
1977-79	70	30	49	51	77	23
1980-82	69	31	48	52	70	30

1/ Percentage change from previous 3-year average.

Source: Statisticheski godishnik, various issues.

to allow capitalism to creep in as it considers to be the case in China. There continues to be a fear of the private sector becoming too wealthy; there are complaints against plottolders for usurping socially owned land, for stealing tools and other AIC property, for owning too many animals, and for making unseemly high profits. 32/ Yet, every year new incentives are introduced to encourage individual farmers, in seeming acknowledgment of the failure of the socialized sector.

Foreign Trade

The NEM seems has had little effect on Bulgaria's performance in international markets. Trade turnover since 1979 has continued to increase at about the same rate as during the seventies. There has been a slight surplus in most years. However, the share of agricultural products in total trade has fallen and the rate of increase in agricultural exports has slowed. Furthermore, three-quarters of Bulgaria's trade continues to be with the Soviet Bloc countries, and over half the trade is with the Soviet Union. Bulgaria still has difficulty penetrating western markets. Trade deficits with both the socialized countries and the developed countries have widened. The overall positive balance came from doubled exports to developing countries.

The share of the socialist countries in Bulgarian trade declined in 1980-82, but then rose in 1983 and 1984. During 1980-82, the share of the socialist countries in Bulgarian imports fell from 81 percent to 77 percent, while their share in exports fell to 70 percent. However, in 1983 and 1984, the socialist share was 80 percent for imports and 76 percent for exports. In 1984, the Soviet Union alone had a 59-percent share in Bulgarian imports and a 56-percent share in exports, up from 55 and 50 percent, respectively, during 1980-82. In contrast, the share of the developed countries in Bulgarian imports fell from 18 percent during 1980-82 to 14 percent in 1984, and their share in Bulgarian exports fell from 13 percent to 9 percent. The reasons for this shift back to trade with the socialist countries is most likely the rising cost of Soviet oil and gas and their increasing share in Bulgarian imports. These fuel imports must be paid for with increased exports.

Imports from developed countries increased 69 percent in 1980-82, after a decline in 1977-79. The result was an increasing deficit with the West. Bulgaria has not yet reached its goal of improving the quality of its production enough to be competitive on western markets. It has felt an increasing need to import technology from the West, but has not been able to increase its exports to the West enough to prevent a widening deficit. Most of its machinery exports still go to socialist countries, with much of the remainder going to developing countries. Bulgaria's food exports still face import barriers from EC countries and go instead to CMEA countries and the developing countries. Most food exports destined for developed countries go to Scandinavia and Austria.

The NEM was supposed to increase agricultural exports. However, the Bulgarians seem disappointed in their export performance. During the recent agricultural plenum, the agricultural sector was severely criticized for its lagging exports. Bulgaria still shows a healthy surplus in its agricultural trade (table 13), but agricultural export growth has slowed: from 68 percent in 1977-79 to 17 percent in 1980-82. Exports of most major agricultural commodities have stagnated. There has been an increase in exports of meat and meat products, but there's been little change in fruit exports, and vegetable exports have remained below the level of the midseventies. Factors other than problems in implementing the NEM were partly responsible for the slowing export growth. World trade contracted during the early eighties, and markets were generally depressed. The precipitous decline in wheat exports was mainly due to poor harvests in the last couple years.

The NEM's emphasis on increasing livestock production resulted in significant increases in imports of oilseed meal and feed grains. Average corn production in 1980-82, despite the impressive gains in yields, increased only 1 percent over the 1977-79 average, due to sharp decreases in area. Domestic oilseed meal production remains insufficient to meet the needs for livestock feed. As a result, meal imports increased 8 percent in 1980-82, while corn imports increased almost 250 percent.

The increase in meal imports has continued: 395,000 tons were imported in 1984, up from an average of 191,000 during 1980-82. The increase in corn imports, however, was only temporary. Bulgarian corn imports fell sharply in 1982, to 390,000 tons from 953,000 in 1981. They fell to about 200,000 tons in 1983, and were close to zero in 1984, even after a severe drought in 1983.

The fall in imports in 1983 was clearly a result of the record 1982 corn crop. The low 1984 imports were most likely due in part to large carryover

1983 stocks. Table 19, which assumes stocks are zero, shows a huge increase in grain used for feed in 1983 followed by a precipitous drop in 1984. Some of the grain available in 1983 was probably used in 1984. But, the low corn imports may also be the result of a trend away from use of grain for feed. Production of corn silage and other forage crops has increased. Imports of meal have also increased sharply and along with them use of meal for feed. If this seeming shift in feeding practices continues, meal imports can be expected to remain high, while a return to normal weather should keep corn production high enough to virtually eliminate imports in most years.

Implications for U.S. Trade

The trend in U.S. exports to Bulgaria since 1980 has not been promising. During 1980-82, average U.S. exports to Bulgaria increased almost fivefold from the 1977-79 average. The U.S. share in Bulgarian corn and soybean meal imports increased from around 30 percent during 1977-79 to over 80 percent. However, that surge in U.S. sales to Bulgaria was only temporary; U.S. exports to Bulgaria fell to \$64 million in 1982, \$35 million in 1983, and \$17 million in 1984.

The two main commodities which the United States sells to Bulgaria remain corn and soybean meal. The increase in U.S. exports of soybean meal was the result of a temporary ban on imports from Brazil, due to fears of swine fever. Bulgarian purchases of U.S. meal fell from 102,000 tons in 1982 to 35,000 tons in 1983 and will most likely remain at that low level for the rest of the decade.

Table 19: Grain and oilseed meal used for feed 1/

Commodity	1971-73	1974-76	1977-79	1980-82	1983	1984
	<u>1,000 tons</u>					
Oilseed meal: <u>2/</u>						
Production	134	174	198	238	254	(232)
Imports	184	301	216	239	312	(441)
Use for feed	318	476	415	477	565	(653)
Total grain:						
Production	7,257	7,086	7,723	8,037	9,851	(7,817)
Imports	104	567	576	717	183	(46)
Exports	585	265	348	679	559	(314)
Use for feed	4,052	4,737	5,290	6,558	9,475	(7,549)

() = estimate.

1/ For each year, calculations are based on previous year's crop production and current year's trade.

2/ Sum of sunflowerseed, rapeseed, soybean, and fish meals converted to 44-percent protein meal equivalent.

Sources: Statisticheski godishnik, various issues; FAO Trade Yearbook, various issues; ERS calculations.

The increase in U.S. exports to Bulgaria in 1980 and 1981 was a temporary phenomenon, caused by factors having little to do with the NEM. Emphasis on the livestock sector in Bulgaria will most likely continue, as will the need for imported meal. However, the NEM has placed considerable emphasis on becoming self-sufficient in feed grains. Corn imports are thus expected to be minimal for the rest of the decade, and U.S. sales will suffer accordingly.

CONCLUSION

It has only been 5 years since the introduction of the NEM, possibly too short a time to judge its long-term effectiveness. It is evident from Bulgarian press reports that the NEM has not yet been fully implemented. Many enterprises have not yet introduced the system of cost accounting, and losses are still tolerated. Results may be more positive if and when the new system is in place throughout the agricultural sector.

At this stage, the Bulgarians seem to be truly disappointed in agricultural performance since the NEM. Output has not increased as they had hoped, costs have continued to rise, and capital productivity has shown little improvement. Performance on export markets has not improved as expected. Despite strong ideological reservations, Bulgarian agriculture has had to rely more and more on the private sector to supply the needs of the population.

There also appears to be some opposition among the management bureaucracy to the full implementation of the NEM. The Bulgarians are clearly not prepared to eliminate all central control over production or investment decisions, and the authorities never had any intention of allowing market forces to set prices. There also continues to be ambivalence towards the private sector.

In implementing some of the NEM provisions, the authorities may have begun to realize that full implementation would generate contradictions in the system. Retaining a percentage of above-plan profits may be of little value if the AIC has minimal control over how the funds are spent. Furthermore, to operate at a profit, the enterprise would have to have more control over both costs and prices. In contracting with organizations providing transport and other services and inputs, the AIC's are dealing with monopoly suppliers and still have no power to control the terms of delivery or the prices of the services. And, of course, the AIC is powerless to raise prices to cover rising costs. For the NEM to be truly effective in agriculture, the Government would have to make major reforms throughout the economy and relinquish far more centralized control than it is prepared to do.



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